Al-Dhahir 2

REMARKS

Claims 1-18 were rejected under 35 USC 112, second paragraph, as being indefinite. The Examiner suggested that the length of the subscript be included, or use of the subscripts be omitted. Respectfully, the Examiner errs in presuming that subscript i (in n_i) is an index that runs from 1 to n-1. Actually, n_i is a number, which may differ from another number, namely n_o. To expedite prosecution, claim 1 is amended to clearly indicate not only that n_i is a number, but that this number is equal to the number of transmitting antennas whose signals the receiver is processing. Similarly, amended claim 1 specifies that n_o is not only a number, but it is the number of receiving antennas of the claimed receiver. As amended, it is believed that claim 1 is clearly in compliance with 35 USC 112.

As for claim 6, it is amended to provide a proper antecedence for the transmission channel, H. Claim 9 is deleted.

As for claim 11, applicants respectfully traverse the rejection because the claim does NOT refer to a transmission channel. Nevertheless, the claim is amended to make it clearer.

Lastly, regarding claim 14, the reference to a parent claim was inadvertently omitted, and this problem is corrected herein.

Claims 1-8 were rejected under 35 USC 103 as being unpatentable over Liang et al, US patent 6,314,147 in view of Bang, EPO 0538218. Claim 1 is amended herein.

Liang et al teach a pre-filter that has M inputs and M outputs. Amended claim 1 specifies that the pre-filter contains a number of outputs that corresponds to the number of transmitting antennas that the receiver is processing, whereas the number of inputs corresponds to the number of receiving antennas. This is not taught by Liang at al, and this teaching is not described or suggested by the Bang reference. Therefore, applicant respectfully submits that amended claim 1 is not obvious in view of Liang et al and Bang combination of references.

As for claim 2, which specifies a particular sampling rate, the Examiner simply points to a passage in the reference that specifies that the input signal undergoes "amplification, filtering, down-conversion, and analog to digital conversion, according to methods well-known in the art to producer received signal samples." This does not teach

Al-Dhahir 2

any particular sampling rate. Moreover, amended claim 2 specifies oversampling, and this notion is completely absent in Liang et al, and also in Bang. The Examiner's comments that sampling can be expressed in terms of sampling period rather than frequency are not material to the question of oversampling. Therefore, applicant respectfully submits that amended claim 2 is clearly not obvious in view of the Liang et al and Bang combination of references.

Claim 3 is amended to specify that filter coefficients are created and installed in the filter to reduce the effective delay of the transmission channel. Nothing pertaining to reducing the memory of the transmission channel is described or suggested by either Liang et al or by Bang.

Claim 4 is dependent on amended claim 1.

As for claim 6, the Examiner asserts that the Band reference teaches the limitation of the claim in col. 3 lines 53 through col. 4, line 41. Applicant respectfully disagrees. The cited passage teaches that synchronization is performed to the training sequence that is received by performing a correlation with a local training sequence. There is no teaching as to how often this is performed, although an implication is found in the cited passage that this synchronization is performed once. See col. 4, lines 36-41, where it states:

> When the training sequence has ended the filters or the equalizer are suitably adjusted. Switch 34 is now switched to the lower position i FIG. 3, whereafter the equalizer receives data that do not belong to the training sequence. The equalizer now works in so called decision mode.

Clearly this does not teach any repetition of the equalization process. In contradistinction, claim 6, prior to its amendment specified that the FIR filters are computed every interval while the transmission channel is substantially constant. By extension, that means that whenever the transmission channel changes, the filter coefficients are recomputed and installed. To make the claim clearer, it is amended herein to explicitly recite that the FIR coefficients are recomputed and reinstalled every time the transmission channel changes. It is respectfully submitted that neither Liang et al nor Bang suggest such recomputing an installing and, therefore, it is believed that claim 6 is not obvious in view of Liang et al and Bang references.

Al-Dhahir 2

Claims 9-11 were rejected under 35 USC 103 as being unpatentable over Liang et al in combination with Bang, and further in view of Raleigh, US Patent 6,219,561. Claims 9 and 10 are deleted, and claim 11 is dependent on amended claim 1.

Claims 12 and 13 were rejected under 35 USC 103 as being unpatentable over Liang et al in combination with Bang, and further in view of Karlsson et al, US Patent 6,314,147.

The Examiner asserts that Karlsson et al disclose a receiver where a plurality of FIR filters are expressed by a matrix and computed by an autocorrelation matrix of a block of signals transmitted by a plurality of transmitting antennas. The Examiner points to essentially the entire Karlsson et al text between col. 5, line 30 and col. 8, line 22. Applicant respectfully traverses.

First, the Karlsson et al reference teaches a beam forming arrangement. The teachings of beam forming do not necessarily lend themselves to the art of detecting the symbols contained in signals transmitted by a multi-transmitting-antennas transmitter. There is absolutely no reason to believe that the teachings of Karlsson et al can in any way improve the operation, or results, obtained from the Liang et al system, or from the Bang system. Hence, there is no motivation to combine the references.

Second, Karlsson et al do not teach that which claim 12 claims. Even if, for argument sake, it is accepted that Karlsson et al teach that which the Examiner asserts that they teach, it still remains that the limitations of claim 6 are neither described nor suggested by Karlsson et al. Specifically, claim 12 specifies that the FIR filters, which can be expressed by matrix $\mathbf{W}$ are computed by one or three equations, to wit:

$$\mathbf{W}_{opt}^{*} = \tilde{\mathbf{B}}_{opt}^{*}\mathbf{R}_{xy}\mathbf{R}_{yy}^{-1},$$

$$\mathbf{W}_{opt}^{*} = \tilde{\mathbf{B}}_{opt}^{*}\mathbf{R}_{xx}\mathbf{H}^{*}(\mathbf{H}\mathbf{R}_{xx}\mathbf{H}^{*} + \mathbf{R}_{nn})^{-1}, \text{ or}$$

$$\mathbf{W}_{opt}^{*} = \tilde{\mathbf{B}}_{opt}^{*}(\mathbf{R}_{xx}^{-1} + \mathbf{H}^{*}\mathbf{R}_{nn}^{-1}H)^{-1}\mathbf{H}^{*}\mathbf{R}_{nn}^{-1}.$$

Karlsson et al do not teach the use of any of the above equations. Therefore, claim 12 is believed to be not obvious in view of Liang et al, Bang, and Karlsson et al combination of references. Claim 13 is dependent on claim 12.

It is noted that claim 14 is not rejected on art, which makes the Examiner's comment about allowable subject matter slightly erroneous.

Al-Dhahir 2

It is respectfully submitted that, in light of the above amendments and remarks, all of the Examiner's rejections have been overcome. Reconsideration and allowance of the outstanding claims are respectfully solicited.

Respectfully,
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